

# Rural Energy Service Companies: An Emerging Model for Sustainable Energy Services in Off-Grid Communities

*The Shell/CPC Initiative in the Philippines*

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# What is a Rural Energy Services Company -- RESCO?

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- Business Entity:
  - sole proprietor, corporation, government agency, cooperative, NGO, etc.
  - for-profit or not-for-profit
- Application-based: focus on energy services, not kWh sales
- Renewable energy-based products or services: e.g., PV solar home systems, wind/PV hybrids, PV, biomass power systems, battery charging using renewables, supply of modern fuels such as LPG, etc.

# What is a RESCO?

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- Market price: Value of the energy service is determined by the user's **willingness and ability to pay**; not a regulated price or uniform tariff
- Service over time: long-term relationship, not a one-time product sale
- Customers are isolated from formal energy supply network: Typically homeowners, community facilities, and small enterprises without near-term access to an electric power grid.

# Challenges Facing RESCOs

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- Customer ability to pay
- Revenue collection, ROI, currency devaluation
- Securing long-term capital at reasonable interest rates
- High cost of generation, distribution and O&M
- Availability of cost-effective, reliable equipment
- Temptation to go “diesel”

# Challenges Facing RESCOs

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- Dispersed customers
- Operating in a franchise territory
- Impact of grant aid projects
- Renewable resource variability
- Uncertain regulatory environment
- Entrenched competition

# What should be the response to RESCOs?

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- Government (regulate? compete? partner?)
- Electric utilities (regulate? compete? partner?)
- Equipment Suppliers?
- Non Governmental Organizations (NGOs)?
- Customers (Demand subsidies? Wait for the subsidized grid? Sign up for market services?)

# Government Should Support RESCOs

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- Electricity and modern fuels essential for sustainable economic development
- Encouraging RESCOs leads to stronger competitive forces and ultimately lowers costs for renewable energy products and services
- RESCO can be a powerful mechanism to attract private capital for rural development
- RESCOs are a way to serve more people sooner

# Utilities/Cooperatives Should Support RESCOs

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- You still have the franchise!
- Could form a RESCO or partner with others
- Bring services to areas that you cannot serve at this time
- Happier constituents



# Suppliers Should Support RESCOs

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- New mechanism to promote existing products
- Could lead to a range of new products
- Commercial, successful, sustainable RESCOs would be good customers

# NGOs Should Support RESCOs

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- Successful RESCOs need NGO skills:
  - Energy for productive uses
  - Alleviation of poverty
  - Health services
  - Women's issues
- A reliable and sustainable energy supply system supports development

# Customers Should Support RESCOs

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- Superior energy at same or lower cost
- No technology risk
- No maintenance risk
- No ownership risk
- No service - no payment
- Discontinue if you don't like the service

# Initiatives to encourage RESCOs

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- Clear government policy that lets market forces “regulate” RESCOs
- Government publication of a list of candidate villages
- Recognition of the RESCO as an important “pioneering industry”
- Provide a range of financial incentives, not subsidies
- Zero import duty for renewable energy-based products that are used by RESCOs to serve un-electrified areas

# Conclusions

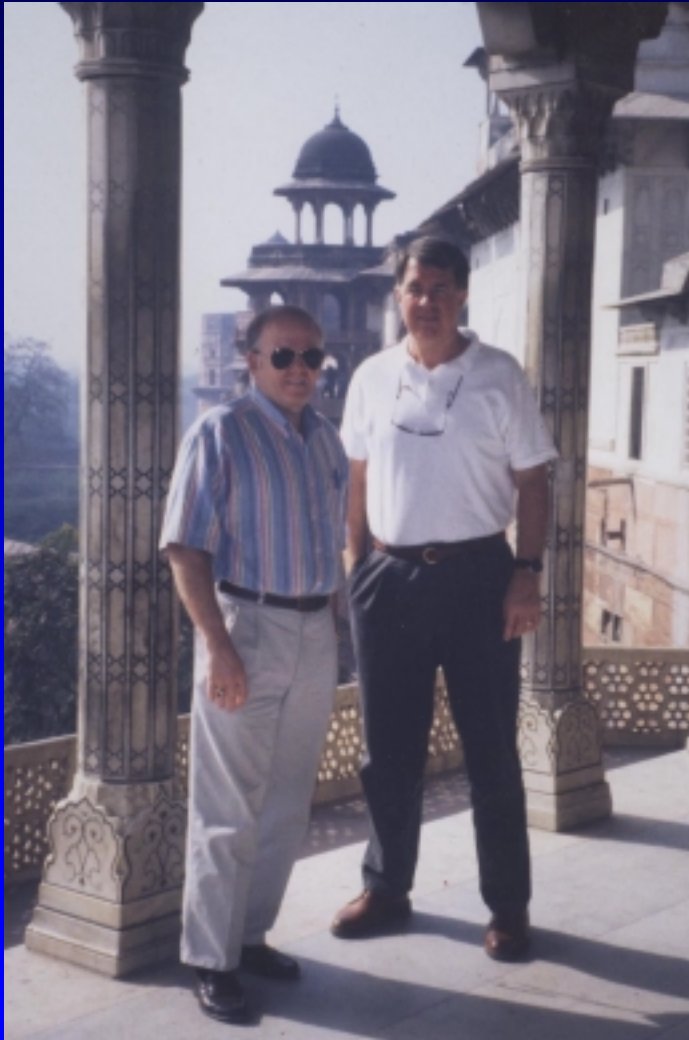
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RESCOs...

- ...are a logical step in the evolution of renewable energy delivery mechanisms in the Philippines [and other countries]
- ...have great potential for deploying large numbers of renewable energy-based products and services to rural people
- ...can meet the challenge

# CPC cofounders

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Art Lilly and Robb  
Walt (right)



Jerome Weingart

# CPC's RESCO Model

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- ◆ Serve **all** customers in a geographic area - build a *service territory*
- ◆ Use most appropriate renewable energy technology
- ◆ Meet **each** customer's priority energy requirements
- ◆ Charge customers **less than** what they now pay for inferior energy

# CPC's RESCO Model

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- ◆ Service **fees**, not kWh rates - sell energy services
- ◆ Provide customers with service without technology risk
- ◆ Use modular/transportable power systems
- ◆ Establish local service infrastructure
- ◆ Share capital costs



# CPC's Integrated Rural Energy Services

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- Both AC and DC electricity services
- Electricity and thermal energy (cooking!)
- Fee-for-service (market-driven)
- On-site operation and maintenance
- Business focus on large-scale replication in a region

# CPC Product Development

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- 25 kWe small modular biopower (SMB) system
- Proprietary electrical energy dispenser (*EnergySwitch<sup>TM</sup>*)
- Small biomass-powered battery charger
- High-efficiency smokeless stove using wide variety of biomass
- PV/LPG hybrid power system
- Coconut oil mill for use with the SMB unit

# CPC Product Development Facility in the Denver area (20 minutes to NREL)

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## The CPC TurboStove

TurboStove uses advanced wood-gas technology and 2 watts of electricity (fan for forced air) to produce a *highly efficient and smokeless wood-gas cooker*.

The TurboStove can use a wide variety of biomass residues.

# The CPC *EnergySwitch*



EnergySwitch - to 30kWh/d  
110 or 220V

Prepayment feature under  
development

Target cost = US\$35

Field resettable



Testing prior to shipping



# AC Energy Dispenser

The Philippine project is the first in the world to provide both AC and DC energy on a market-driven, fee-for-service basis.

The product that enables the AC fee-for-service option is CPC's EnergySwitch (photo shows the unit being installed in a customer's home).

For a monthly fee, the EnergySwitch provides access to a preset amount of AC electricity per day.



# CPC's Small Modular Biopower (SMB) development team

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# CPC SMB power generation unit

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- 3 kWe prototype trailer-mounted power system
- Uses agricultural and forest product residues
  - coconut shells
  - palm nut shells
  - forest slash
  - corn cobs
- Final unit in Alaminos will be two 12.5 kWe units in parallel to serve the community and a small coconut mill (targeted for end of year 2000)



# Coconut husks are an important feedstock for small modular biopower units

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# The CPC alliance with Shell International Renewables (SIR)

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- CPC and Shell met at Village Power 98 at the World Bank; Winrock/USAID facilitation
- Shell expressed interest in the CPC RESCO model (rural electrification is one of the SIR business segments)
- CPC had entre to Philippine province of Aklan
- Joint feasibility study was conducted for a RESCO in Aklan, Alaminos village selected
- Aklan RESCO went on line in March 2000
- Future RESCOs (3 more in Aklan, 6 in Palawan)

# The Shell *SunStation* Model

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- Provides AC and DC electricity services and thermal energy services
- Retail service on a “fee for service” basis
- Works to serve maximum number of people, to permit affordable energy services
- Target markets: areas with high concentration of accessible population with no electricity, but good economic development potential
- **10 Philippine sites (4 in Aklan, 6 in Palawan)**

# Roles of Shell and CPC

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## CPC

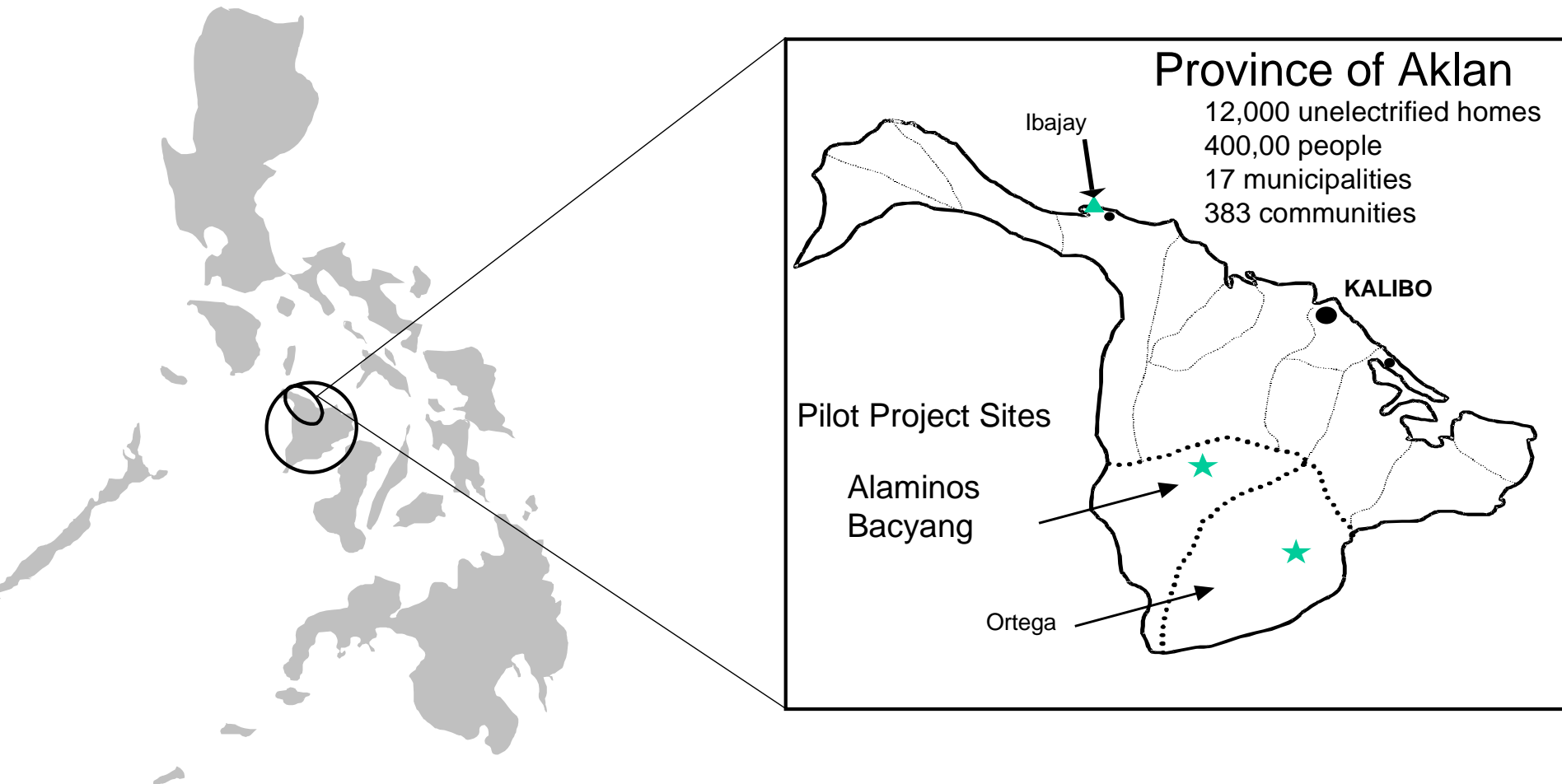
- Product design
- Equipment procurement and supply
- Product development
- Tariff design
- Revenue collection design
- Equipment installation
- Training customers & staff
- Monitoring and analysis

## Shell Renewables

- Project financing
- Secure licenses/approvals
- Legal
- Establish local company
- Site management
- Equipment operation
- Maintenance
- Revenue collection
- Data collection
- Project replication

# Location of Shell/CPC first Philippines RESCO

## Philippines



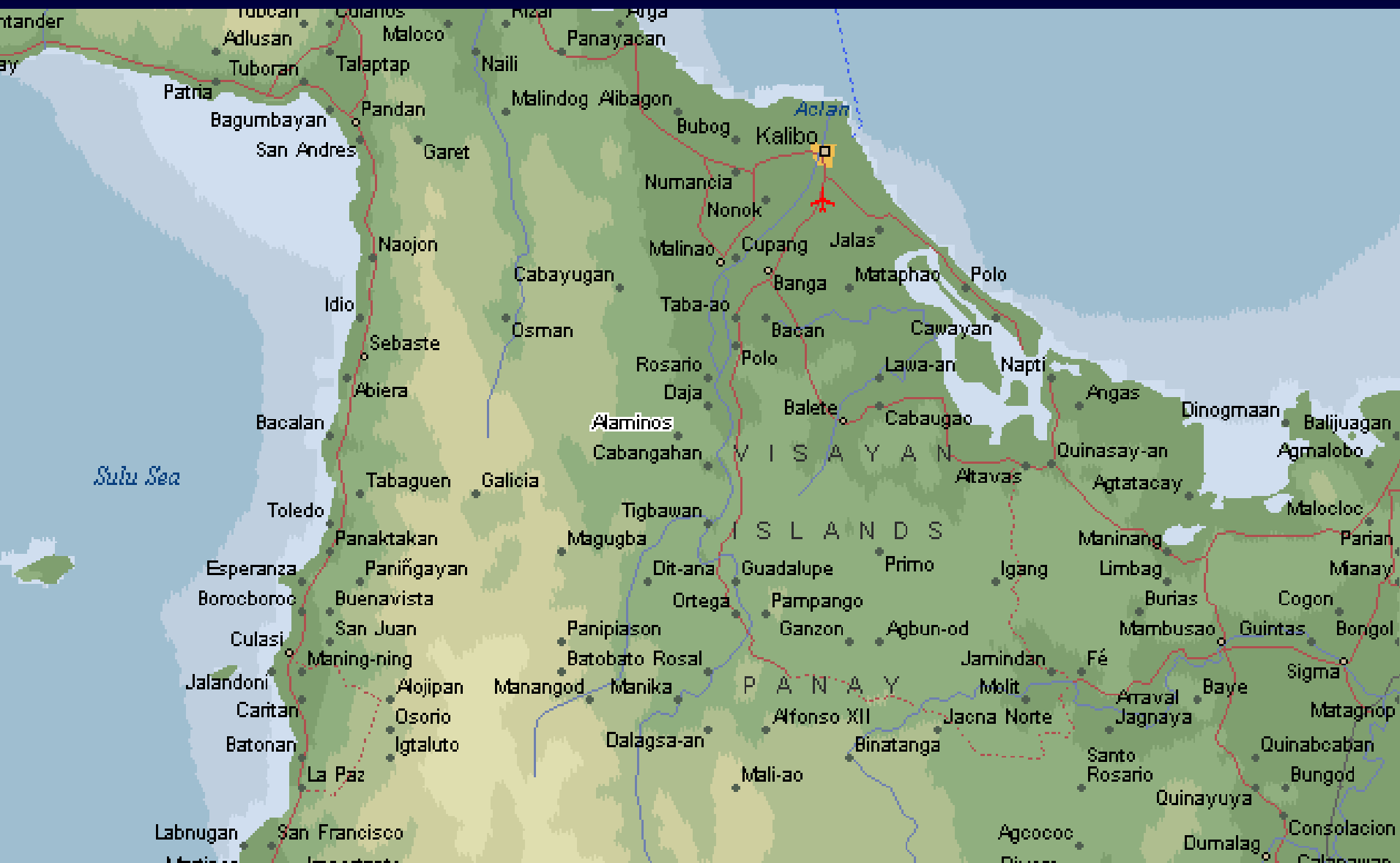
# Panay Island, Philippines



# Northern Panay



# Alaminos, Aklan Province





# Main street -- village of Alaminos (Aklan Province, Philippines)

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# Typical house in Alaminos

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# Shell/CPC hybrid power at Alaminos



# *SunWize* PV/propane hybrid unit

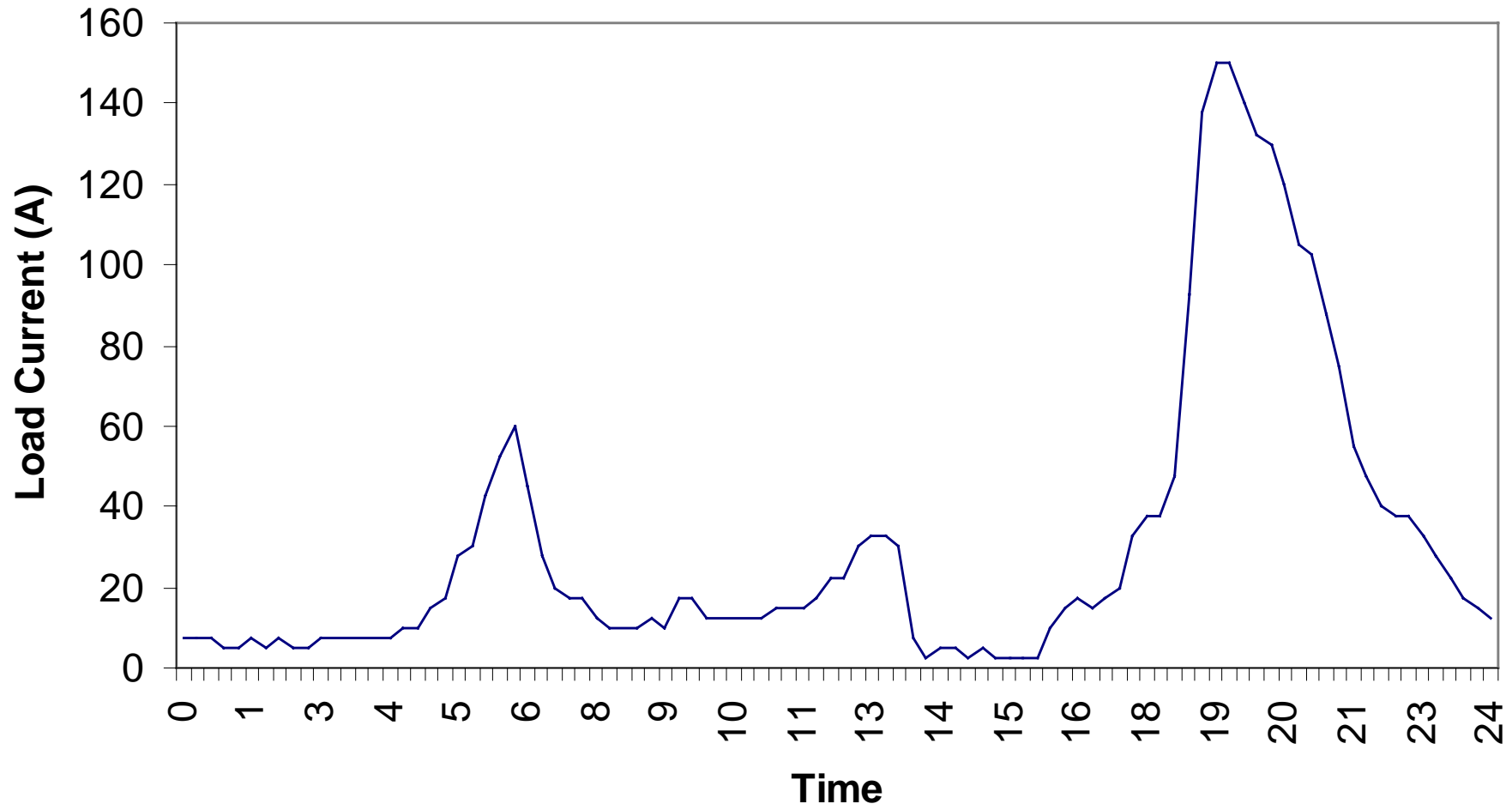
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- 3.6 kWp PV (48 75-watt Shell modules)
- 9 kWe Koehler genset (LPG-fired)
- 4 kW Trace inverter
- 40 kWh battery capacity
- Customers
  - ca. 75 residential customers on 220 VAC service
  - 10 customers on PV solar home systems
- ❖ Note: Shell is the largest producer of LPG in the Philippines

# PV/propane hybrid power unit



# Village Load Profile (14/3/2000)





# Alaminos energy services clients



# December 24, 1999

## First evening mass at Alaminos

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- The church is a central element of life in Alaminos, but
- without light it was rarely used after dark
- The hybrid-powered lights include five interior lights (and the temporary lights for the celebration of the first evening mass).
- The church will be used in the evening for community and educational activities.



# The church in Alaminos

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# For further information...

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